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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/757,518	01/15/2004	Pirjo Pasanen	59643.00360	4595

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EXAMINER
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HOUSHMAND, HOOMAN

ART UNIT	PAPER NUMBER
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2609

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07/26/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/757,518

Applicant(s)

PASANEN ET AL.

Examiner

Hooman Houshmand

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 January 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-39 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 01/15/2004, 06/06/2005
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-39 are rejected under 35 U.S.C. 102(e) as being anticipated by Walton (PGPUB: 20040081131).

#### Regarding **Claim 1.**

Walton teaches (Page 1, Para 5):

A method of allocating subcarriers (subbands) in a multicarrier (respective carrier) modulation communication system, the method comprising: allocating (partitioning) a plurality of sets of sequential subcarriers (partitioning of overall system bandwidth into subbands) to a plurality of users (Page 1, Para 10).

#### Regarding **Claim 2.**

Walton teaches (Pages 1 and 2, Para 13):

determining a size (particular size selected for a user) of a set of sequential subcarriers (OFDM symbols).

Regarding **Claim 3**.

Walton teaches (Page 11, Para 125):

wherein said determining the size of a set of sequential subcarriers (subbands used) comprises taking into account a channel coherence bandwidth (the width is taking into account with respect to SNR) of at least one of the users.

Regarding **Claim 4**.

Walton teaches (Page 11, Para 125):

wherein said determining the size of the set of sequential subcarriers (subbands used) comprises taking into account a smallest channel coherence bandwidth (when the channel coherence bandwidth is small, the degradation according to SNR level is taken into account) of the plurality of users (user terminals Page 11, Para 132).

Regarding **Claim 5**.

Walton teaches (Page 11, Para 125):

wherein said determining the size of the set of sequential subcarriers (subbands used) comprises taking into account a channel coherence bandwidth (the width is taking into account with respect to SNR) of a respective user (Page 10, Para 112).

Regarding **Claim 6**.

Walton teaches (Page 9, Para 98):

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wherein said determining the size of the set of sequential subcarriers (mapping data to modulation symbols) comprises taking into account a modulation scheme of at least one of the plurality of users (the modulation scheme used for a specific spatial channel).

Regarding **Claim 7**.

Walton teaches (Page 9, Para 91):

wherein said determining the size of the set of sequential subcarriers (subbands) comprises taking into account a coding scheme (number of information bits sent per modulation symbol) of at least one of the plurality of users (each data packet).

Regarding **Claim 8**.

Walton teaches (Page 9, Para 91):

wherein said determining the size of the set of sequential subcarriers (subbands) comprises providing a lower limit for the size (the small OFDM symbol would be the lower limit) of the set of sequential subcarriers (subbands).

Regarding **Claim 9**.

Walton teaches (Page 9, Para 91):

providing the lower limit (small symbols) comprising a cell-specific (symbol capacity) lower limit or a system specific (payload size) lower limit.

Regarding **Claim 10**.

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Walton teaches (Page 9, Para 91):

providing the lower limit (small symbols) comprising a system-specific (payload size) lower limit; and providing a further cell-specific (symbol capacity) lower limit for the size of the set of sequential subcarriers (subbands).

Regarding **Claim 11**.

Walton teaches (Page 9, Para 91):

wherein determining the size of the set of sequential subcarriers (subbands) comprises selecting the size of the set of sequential subcarriers from a plurality of predetermined (large and small OFDM symbols) sizes (Page 9, Para 92).

Regarding **Claim 12**.

Walton teaches (Page 3, Para 38):

providing the size of the set of sequential subcarriers comprising a power of two (sizes are powers of two).

Regarding **Claim 13**.

Walton teaches (Page 9, Para 96):

wherein said determining the size (group of consecutive code bits) of the set of sequential subcarriers (subbands) comprises taking into account a block length (code bits in each group) of a space-frequency code (time, frequency, and spatial diversity) used for at least one of the plurality of users (each group).

Regarding **Claim 14**.

Walton teaches (Page 6, Para 68):

providing a length of a coding block (symbol size) for at least one of the plurality of users (start of a data packet would be associated with at least one user) comprising a multiple of the size (performs FFT for blocks of samples; effectively, multiples of cyclic prefix length) of the set of sequential subcarriers (OFDM uses subbands associated with their respective carriers Page 1, Para 5).

Regarding **Claim 15**.

Walton teaches (Page 1, Para 10):

wherein said determining the size of the set of subcarriers (subband set) comprises determining within an allocation period sets (reserved subband set) of sequential subcarriers (subbands) having a same size (OFDM partitions the system bandwidth into a number of subbands Page 1, Para 5. The number of subbands is determined by the size of the IFFT Page 1, Para 6. The system bandwidth is divided into N subbands with the use of an N-point IFFT Page 2, Para 31).

Regarding **Claim 16**.

Walton teaches (Page 1, Para 10):

wherein said determining the size (allocating sets) of the set of subcarriers (subbands) comprises determining a first set of sequential subcarriers having a first size and a

second set (different subband sets for different users) of sequential subcarriers having a second size within an allocation period (OFDM symbol period Page 1, Para 6).

Regarding **Claim 17**.

Walton teaches (Page 5, Para 57):

providing at least one unallocated guard band (guard subband) between two of the plurality of sets of sequential subcarriers (subband 27-31 of the current carrier is guard band and the subbands of -31 to -27 of the next carrier are guard bands) allocated to the plurality of users (data from different users may be transmitted using OFDM symbols Page 3, Para 37).

Regarding **Claim 18**.

Walton teaches (Page 3, Para 32):

wherein said allocating (size of the OFDM symbol) the plurality of sets of sequential subcarriers (subbands) comprises taking into account channel properties (coherence time) of at least one user (multiple users share the OFDM symbol Para 10).

Regarding **Claim 19**.

Walton teaches (Page 2, Para 28):

wherein said allocating the plurality of sets of sequential subcarriers comprises allocating to the plurality of users for transmitting information (transmitted data, e.g.



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information bits) to the plurality of users (downlink transport channels include a broadcast channel Page 4, Para 50).

Regarding **Claim 20**.

Walton teaches (Page 2, Para 28):

wherein said allocating the plurality of sets of sequential subcarriers comprises allocating to the plurality of users for transmitting information from the plurality of users (uplink (i.e., reverse link) refers to the communication link from the user terminal to the access point Page 4, Para 48).

Regarding **Claim 21**.

Walton teaches (Page 1, Para 5):

A network element for controlling multicarrier modulation (OFDM) communications, the network element being configured to allocate (Para 10: allocating different sets of subbands to different users) a plurality of sets of sequential subcarriers (subbands) to a plurality of users (Para 10: different users) in an allocation period (OFDM symbol period Para 29).

Regarding **Claim 22**.

Walton teaches (Page 4, Para 48):

wherein the network element is for a cellular (mobile, wireless) telecommunications network.

Regarding **Claim 23**.

Walton teaches (Page 1, Para 10):

A multicarrier modulation communication system (OFDM system Para 135), the multicarrier modulation communication system being configured to allocate (allocating different disjoint sets of subbands to different users) a plurality of sets of sequential subcarriers (sets of subbands) to a plurality of users (allocating to different users) in an allocation period (OFDM symbol period Para 07).

Regarding **Claim 24**.

Walton teaches (Page 1, Para 10):

A method of multicarrier modulation transmission (OFDM system Para 135), the method comprising: transmitting at least one signal (transmitting at least a packet Para 11) relating to at least one set of sequential subcarriers (subbands) among a plurality of sets of sequential subcarriers (sets of subbands) allocated (allocating different sets of subbands to different users) in an allocation period (OFDM symbol period Para 07) to a plurality of users (allocating to different users).

Regarding **Claim 25**.

Walton teaches (Page 1, Para 10):

allocating the plurality of sets of sequential subcarriers (allocating sets of subbands to different users) for transmitting information to the plurality of users.

Regarding **Claim 26**.

Walton teaches (Page 8, Para 84):

transmitting a plurality of signals (transmitted downlink signals) to the plurality of users (each user terminal).

Regarding **Claim 27**.

Walton teaches (Page 1, Para 10):

allocating the plurality of sets of sequential subcarriers (allocating different disjoint sets of subbands to different users Page 1, Para 10) for transmitting information from (techniques for uplink using OFDM symbols Para 134) the plurality of users (allocating to different users).

Regarding **Claim 28**.

Walton teaches (Page 1, Para 10):

A method of multicarrier modulation reception (receiver Para 130, Page 11), the method comprising: receiving at least one signal (reference received on a subband Para 122 Page 10) relating to at least one set of sequential subcarriers (subbands) among a plurality of sets of sequential subcarriers (sets of subbands) allocated to a plurality of users (allocating different sets of subbands to different users) in an allocation period (OFDM symbol period Para 07).

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Regarding **Claim 29**.

Walton teaches (Page 1, Para 10):

allocating the plurality of sets of sequential subcarriers (allocating different sets of subbands to different users) for receiving (uplinked signals are received by antennas Para 88 Page 8) information from the plurality of users (allocating to different users).

Regarding **Claim 30**.

Walton teaches (Page 8, Para 88):

receiving a plurality of signals (uplinked signals are received Para 88 Page 8) from the plurality of users (uplink from a user terminal Para 70, uplinks from user terminals Para 51).

Regarding **Claim 31**.

Walton teaches (Page 1, Para 10):

allocating the plurality of sets of sequential subcarriers (allocating different sets of subbands to different users) for receiving information (communication link to the user terminal Para 48, Page 4) in the plurality of users (allocating to different users).

Regarding **Claim 32**.

Walton teaches (Page 1, Para 10):

A device for multicarrier modulation transmission (mobile station, wireless device Para 48), the device being configured to transmit at least one signal (transmitting at least a

packet Para 11) relating to at least one set of sequential subcarriers among a plurality of sets of sequential subcarriers (subbands) allocated to the plurality of users (allocating different sets of subbands to different users) in an allocation period (OFDM symbol period Para 07).

Regarding **Claim 33**.

Walton teaches (Page 1, Para 10):

wherein the plurality of sets of sequential subcarriers is allocated for transmitting information (techniques for uplink using OFDM symbols Para 134) to the plurality of users (allocating different sets of subbands to different users).

Regarding **Claim 34**.

Walton teaches (Page 1, Para 10):

wherein the plurality of sets of sequential subcarriers is allocated for transmitting information from the plurality of users (allocating different sets of subbands to different users), the device corresponding to at least one of the users (A user terminal also referred to as an access terminal, a mobile station, a user equipment (UE), a wireless device Para 48).

Regarding **Claim 35**.

Walton teaches (Page 1, Para 10):

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A device for multicarrier modulation reception (receiver Para 130, Page 11), the device being configured (OFDM symbol size for each time segment configured Para 40 Page 3) to receive at least one signal relating to at least one set of sequential subcarriers (subbands) among a plurality of sets of sequential subcarriers allocated to a plurality of users (allocating different sets of subbands to different users) in an allocation period (OFDM symbol period Para 07).

Regarding **Claim 36**.

Walton teaches (Page 1, Para 10):

wherein the plurality of sets of sequential subcarriers (subbands) is allocated for receiving information (communication link to the user terminal Para 48, Page 4) from the plurality of users (allocating different sets of subbands to different users).

Regarding **Claim 37**.

Walton teaches (Page 1, Para 10):

wherein the plurality of sets of sequential subcarriers (subbands) is allocated for receiving information in the plurality of users (allocating different sets of subbands to different users), the device corresponding to at least one of the users (A user terminal also referred to as an access terminal, a mobile station, a user equipment (UE), a wireless device Para 48 Page 4).

Regarding **Claim 38**.

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Walton teaches (Page 1, Para 10):

the device further configured (OFDM symbol size for each time segment may be configured Para 40 Page 3) to allocate the plurality of sets of sequential subcarriers (allocating different sets of subbands).

Regarding **Claim 39**.

Walton teaches (Para 48 Page 4):

wherein the device (a mobile station, a wireless device) is for a cellular telecommunications network (MIMO-OFDM system).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hooman Houshmand whose telephone number is 571-270-1817. The examiner can normally be reached on Monday - Friday 8 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Garber can be reached on 571-272-2194. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HH

A handwritten signature in black ink, appearing to read "Huwen Pan". The signature is fluid and cursive, with a long horizontal stroke extending to the right.